

REMARKS

The present invention relates to water-soluble carboxymethylcelluloses (CMCs) that exhibit unique and highly desirable rheology and performance in end use systems and to CMCs made by a process for the preparation thereof. The CMCs of the present invention exhibit associative behavior both in neat solutions and in filled systems. The association is shear reversible, which enhances utility of the CMCs in various end use systems.

Claims 1-3 and 7-8 are pending in the present application. Claims 4-6 and 9-21 have been withdrawn from further consideration in the present application pursuant to the election previously made on December 12, 2006. Reconsideration and allowance of pending claims 1-3 and 7-8 in view of the following remarks is respectfully requested.

Claim Objections

The Office Action objected to claim 3 because the term "thixotropic" contained therein was misspelled. Applicants have corrected this misspelling and have presented an amended claim 3 containing the term "thixotropic" with the correct spelling. Applicants respectfully thank the Examiner for pointing out this error in claim 3.

Applicants have *sua sponte* corrected errors contained in claims 1 and 2 by inserting a period at the end of each claim.

Rejection Under 35 U.S.C. §112, second paragraph.

The Office Action rejected claims 1-3 under 35 U.S.C. §112, second paragraph, as being as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as their invention. In particular, the Office Action states that "[T]he recitation 'less than' is not clearly defined in the specification. The lack of lower limit in the ranges claimed renders the claims indefinite."

Applicants respectfully disagree with the use of the term "less than" in claims 1-3 renders the claims indefinite. Applicants respectfully traverse the rejection of claims 1-3 under 35 U.S.C. §112, second paragraph and respectfully request that the rejection of be withdrawn as improperly given.

In claims 1 and 2, the carboxymethylcellulose (CMC) is described as having "...a relative urea/water ratio of less than 0.9" and "...less than 0.8" respectively. The meaning of this "relative urea/water ratio" is set forth in the specification on page 2, beginning on line 11, as well as on page 8, beginning on line 21. Since the CMC is measured in 6M urea and water under the same concentrations and conditions, the ratios of the measured viscosities would be "relative" to one another. Since the term "less than" modifies a ratio of the viscosity of a solution of CMC in 6M urea when compared to a solution of the CMC in water, a value

of "1" means that the CMC in 6M urea and the CMC in water would have the same viscosities under the same measurement conditions and concentrations while a value of "less than 0.9" means the viscosity of the CMC in 6M urea would be less than 90% its relative viscosity in water. However, a value of "0" in this ratio is believed not to be obtainable since to achieve a value of "0" would require a CMC to exhibit a dynamic viscosity of "0" in 6M urea. It is expected that every liquid tested should exhibit some viscosity when tested. As such, Applicants respectfully submit that the inclusion of the term "less than" in claims 1 and 2 do not render these claims indefinite since it is expected that each CMC solution tested should exhibit some viscosity.

Applicants respectfully submit that one of ordinary skill in the art would understand what is claimed by the term "...a relative urea/water ratio of less than 0.9", in light of the specification. Applicants respectfully assert that in view of the above, the rejection of 1-3 under 35 U.S.C. §112, second paragraph as being indefinite has been traversed. Applicants respectfully request that the rejection of these claims be withdrawn.

Claim Rejections – 35 USC § 102

Rejection of claims 1-3 under 35 U.S.C. §102(b).

The Office Action rejected claims 1-3 under 35 U.S.C. §102(b) as anticipated by Bormeister et al. (German Patent No. 233,377 A1 English Translation).

Applicant respectfully traverses the rejection of claim 1-3 under 35 U.S.C. §102(b) as anticipated by Bormeister et al. for the reason that Bormeister et al. does not teach or disclose Applicants' inventive CMC, as claimed. Bormeister et al. does not disclose a carboxymethylcellulose (CMC) having "...a relative urea/water ratio of less than 0.9".

The Office Action states that "...the range claimed in the instant application, 'less than 0.9' or 'less than 0.8' is considered to included a (sic.) urea content of zero as well. As such, claims 1-3 are deemed anticipated by Bormeister et al."

As discussed in the traversal of the rejection of claims 1-3 under 35 U.S.C. §112, second paragraph, the limitation "less than 0.9" as well as "less than 0.8" relate to a ratio of CMC viscosities measured in 6M urea and water under the same concentrations and conditions where the ratios of the measured viscosities would be "relative" to one another. These limitations do not describe urea content of the CMC as suggested in the Office Action, but rather are clearly directed to a ratio of viscosities of CMC when measured in 6M urea and water under the same concentrations. A value of "0" in this ratio is believed not to be obtainable since to achieve a value of "0" would require a CMC to exhibit a dynamic viscosity of "0" in 6M urea. It is expected that every liquid tested should exhibit some viscosity.

Applicants respectfully submit that the Office Action mistakenly read the limitation "a relative urea/water ratio" contained in claims 1 and 2 to mean "urea content". While it is

possible that an "urea content" could be zero, as discussed in the previous section of this response, "a relative urea/water ratio" could only be zero if a CMC were to exhibit a dynamic viscosity of "0" in 6M urea. It is expected that every CMC tested should exhibit some viscosity.

Applicants respectfully assert that in view of the above, the rejection of claims 1-3 under 35 U.S.C. §102(b) as anticipated by Bormeister et al. is overcome. Applicants respectfully request that the rejection of these claims be withdrawn.

Rejection of claims 1-2 and 7 and 8 under 35 U.S.C. §102(b).

The Office Action rejected claims 1-2 and 7 and 8 under 35 U.S.C. §102(b) as anticipated by Kamide et al. (US Patent No. 4,579,943). The Office Action states that "Kamide et al. discloses the synthesis of carboxymethylcellulose, with a degree of substitution of 0.1 to 0.64." The Office Action also states that "Kamide discloses carboxymethylcellulose having a urea/water ratio of 1.94/97.09" ... and "The CMC was prepared using 10g of regenerated cellulose..."

Applicants respectfully traverse the rejection of claims 1-2 and 7 and 8 as being anticipated by Kamide et al. (US Patent No. 4,579,943), for the reason that Kamide et al. does not teach or disclose Applicants' inventive CMC, as claimed.

US Patent No. 4,579,943 to Kamide et al. discloses a CMC, or its salt, "...having a surprisingly high liquid absorbing property, which is derived from cellulose having a crystal form of cellulose II (regenerated cellulose)." (Column 2, lines 36-40.) The CMC of Kamide et al. is for use as "...an adsorbent or a liquid adsorber." (Column 8, line 29.) Alternatively, the CMC of Kamide et al. may be used in "...the field where the ion exchange property of the CMC is utilized." (Column 8, lines 31-32.)

Applicants respectfully submit that the CMCs taught in Kamide et al. are used as adsorbents and, as such, are not taught as being soluble in aqueous solutions, which is different from the CMC of the present invention. Kamide et al. teaches a carboxymethylcellulose capable of absorbing artificial urine having a urea/water ratio of 1.94/97.09. This has nothing to do with a CMC's "relative urea/water ratio" as claimed by the Applicants, but rather relates to the CMCs of Kamide et al. ability to function in the form of a nonwoven fabric as an absorbent for body fluids.

Additionally, the CMCs as taught in Kamide et al. are derived from cellulose II (regenerated cellulose). As the Applicants state in their specification on page 2, lines 12-13, "[T]he CMCs of the current invention are derived from cellulose I, not cellulose II or regenerated cellulose." Applicants have amended claims 1 and 7 to make this point clear.

Applicants respectfully submit that the Kamide et al. clearly does not disclose or teach Applicants' inventive CMCs since CMCs of Kamide et al. are not taught as being

soluble but rather are disclosed as being used as absorbents. Kamide et al. does not teach or disclose CMCs as having the "relative urea/water ratio" as contained in the present claims, and Applicants' inventive CMCs are derived from cellulose I, and not cellulose II or regenerated cellulose as taught in Kamide et al. As such, Applicants respectfully submit that the rejection of claims 1-2 and 7-8 as being anticipated by Kamide et al. has been traversed for the reason that Kamide et al. does not teach or disclose Applicants' inventive CMC, as claimed.

Applicants respectfully request the withdrawal of the rejection of claims 1-2 and 7 and 8 under 35 U.S.C. §102(b) and request the allowance of claims 1-2 and 7-8.

Amendments to Claims.

As previously stated, Applicants have amended claims 1 and 2 by inserting a period at the end of each claim, and claim 3 has been amended to correct the spelling of the term "thixotropic".

Claims 1 and 7 have been amended by inserting the limitation that the CMC of the present invention is derived from cellulose I. The basis for this amendment may be found on page 2, lines 12-13 of the specification as originally filed.

Claim 7 has also been amended to recite the process steps found in claim 4, as originally filed. Since claim 4 has been withdrawn from consideration in this present examination and claim 7 originally was dependent upon claim 4, these steps were needed to complete the claim.

Claims 32 and 33 have been added. The support for these claims can be found on page 17, Table 1 of the specification as originally filed. These claims are added to recite the relative urea to water ratio as a bounded range.

CONCLUSION

In view of the foregoing, Applicants respectfully request withdrawal of the above-mentioned rejections of record, and the allowance of all pending claims, and the holding of this application in condition for allowance. If any points remain of issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the below-listed telephone number.

Except as otherwise stated in the above-noted remarks, Applicants notes that each of the amendments have been made to place the claims in better form for U.S. practice, not to distinguish the claims from prior art references, otherwise narrow the scope of the previously pending claims or comply with the other statutory requirements.

Respectfully submitted,



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